



UNITED STATES NAVY

MEDICAL NEWS LETTER

Surgeon General's Christmas Message 1958

With the spirit of Christmas, the Surgeon General sends all hands:

A SIMPLE PRAYER

"Lord, make me an instrument of your peace

Where there is hatred . . . let me sow love.

Where there is injury . . . pardon.

Where there is doubt . . . faith.

Where there is despair . . . hope.

Where there is darkness, light.

Where there is sadness . . . joy.

O Divine Master, grant that I may
not so much seek

To be consoled . . . as to console,

To be understood . . . as to understand,

To be loved . . . as to love,

for

It is in giving . . . that we receive,

It is in pardoning, that we are pardoned,

It is in dying . . . that we are born to
eternal life."

In this spirit, may we all observe Christmas and live throughout the coming year.

Bartholomew W Hogan

B. W. Hogan

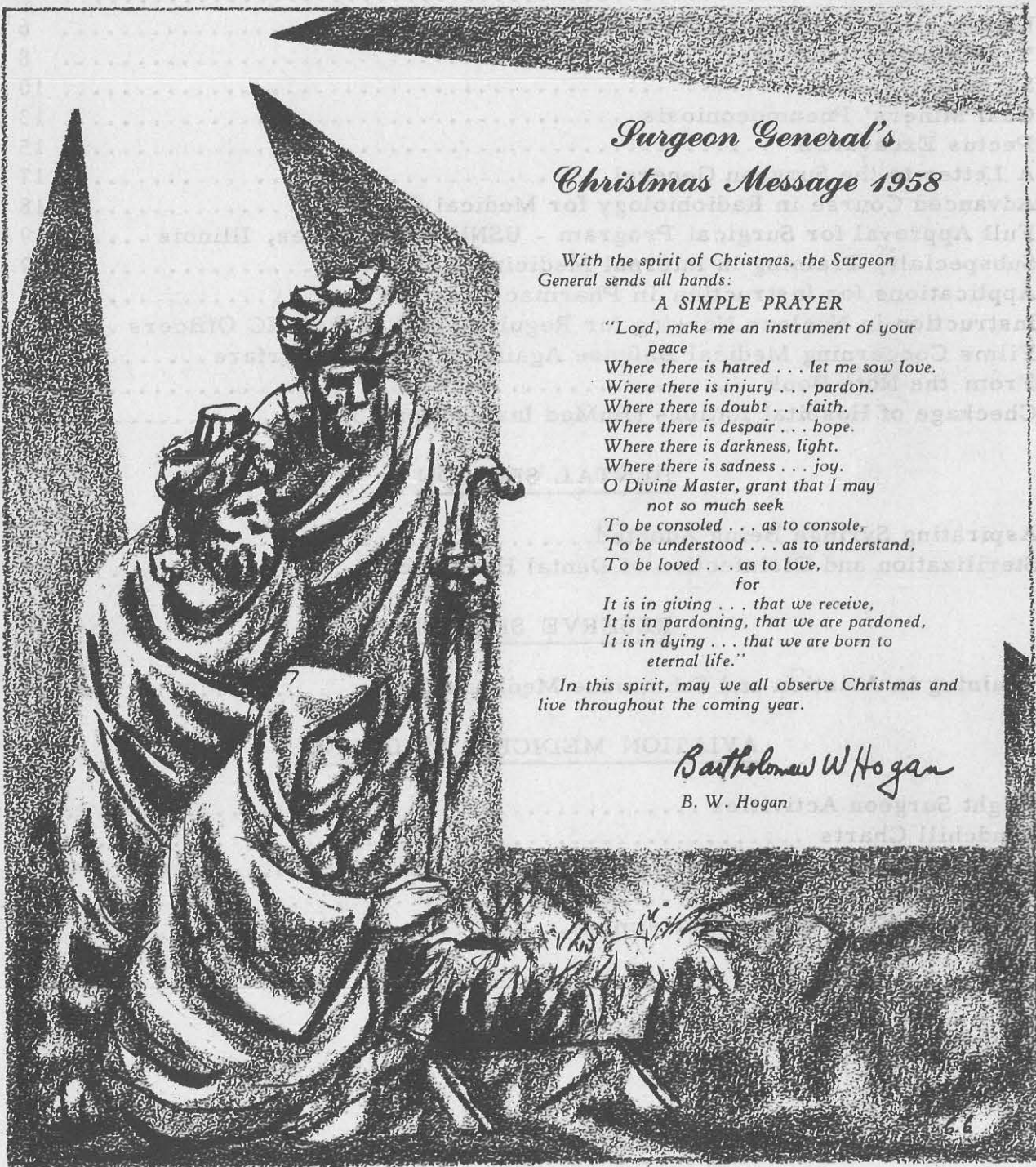


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Policy

The U. S. Navy Medical News Letter, is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Stress Fractures

A stress fracture (insufficiency fracture or fatigue fracture) is a break in the continuity of bone caused by the summation of stresses or minimal traumata, any one of which by itself would be harmless.

The stress fracture of the metatarsal which is commonly known to all orthopedists and physicians who have worked around recruit depots was first described by Breithaupt in 1855. In World War II, and during the Korean conflict, many case reports can be found in the literature. Fractures have been seen in the metatarsal, os calci, lower and upper fibula, lower, mid, and upper tibia, lower and upper femur, pelvis, and ulna, and also have been reported by some observers in the ribs, spine, and clavicle. Most of the cases are reported from military camps, but they also can occur in civilian ice skaters, ballerinas, mail carriers, and also in children.

Three hundred and thirty-two cases of stress fractures hospitalized in the U. S. Naval Hospital, Beaufort, S. C. over a period of 2 years are reported. These cases have been carefully screened and any indication of acute or spontaneous direct trauma are not included.

Four types of fatigue fractures are commonly seen. It must be understood that this series includes only hospital admissions. It is known that many cases of stress fractures are returned directly to duty without medical aid or treatment. The series includes 134 fractures of the os calci, 93 of the fibulae (upper third), 67 of the metatarsal, and 38 of the tibiae (upper third). Also included in the series is one fracture of the obturator ring, one of the femoral neck of the femur, one of the lower third of the fibula, and two of the lower third of the tibia.

All of the stress fractures are described, giving briefly the clinical signs and treatment used at this hospital. All fractures exhibit two characteristics—local edema and local point tenderness. Symptoms may not

be severe and the patient may be returned to duty and report into the sick bay several times. X-Rays are not necessarily positive on the first visit. In fact, in one case, 30 days elapsed between the onset of symptoms and a positive x-ray revealing only the slightest periosteal elevation which later developed into a full fledged stress fracture. Patients with stress fractures are frequently of the more poorly motivated recruit; the tendency to dismiss them as neurotic patients is high. Fractures of the metatarsal, tibia, and fibula are briefly presented and the os calcis in more detail because most of the clinical study was done with this new and rather infrequently reported fracture.

Fracture of the os calcis attracted the author's attention first of all because of its newness to him, and second, because it resulted in the most admissions—approximately 3 to 4 out of 5 in all stress fractures found. Previous diagnoses of this condition, as proven by review of many x-rays, were tenosynovitis, tendinitis of the heel cord, arthritis, rheumatic fever, cellulitis without lymphangitis, and neuroses. The symptoms consist of pain and swelling in the heel anterior to the heel cord just above and over the postero-superior aspect of the os calcis itself. The only positive findings are edema and point tenderness, but the edema subsides after 8 hours of bed rest, the point tenderness persisting, sometimes, as long as 2 weeks. Initial x-rays are always negative, but will show postero-superiorly increased density perpendicular to the stresslines at a later date—usually within 10 days. The treatment consists—as in other fractures—of graded weight bearing with sponge rubber heels and return to duty in approximately 8 to 10 weeks. At this time of discharge, approximately 10% of the patients are readmitted for recurrence of symptoms, but there is no known way to prevent this readmission rate without keeping all patients for a period of 12 weeks at which time there is no return.

All of these fractures occur in the first 3 weeks of training with fully 90% of the symptoms developing in the first week. The average recruit sustaining this fracture is 22 years of age or older (58 cases), thin-shanked (approximately 50%), and gives a history of athletic inactivity for a period of approximately 3 years prior to enlistment.

Several programs have been instituted to correct this condition including all types of felt and sponge rubber pads in the heels, careful shoe and boot care, and allowing certain platoons to carry through with dress shoes rather than the field boot. None of these measures has decreased the incidence in stress fracture. At one time, 450 patients were x-rayed at the highest peak incidence of positive x-ray findings (3rd to 4th week of training, 10 to 14 days after usual onset of symptoms) and 7 had positive x-rays. Of these, 3 had been discharged from the hospital recently after having been treated for the fracture; 4 other new cases did not report to the sick bay and, therefore, were not hospitalized. All of the 450 patients were carefully examined prior to being x-rayed and 8 had symptoms compatible with stress fracture of the

os calsis. Of these 8, 7 had the positive x-ray findings as described. The only conclusion that can be made is that all recruits do not "turn in" when symptoms develop.

On return to duty, the patients continue to have some pain with little or no edema. In a period of 10 days to 2 weeks, the symptoms disappear entirely and do not recur.

X-Rays are not described with the individual fractures because they are all quite similar. At the areas described, in the metatarsal, the fibula, the tibia, and the os calcis, the first evidence of fracture is represented either by a small crack in the cortex (more common in the fibula and metatarsal), or a slight periosteal elevation (more common in the tibia and the os calcis). Within 10 days to 2 weeks, this line extends across the bone perpendicular to the stress lines. Healing occurs by increase in this density and final bridging of larger and thicker stress lines with entire disappearance of the fracture. Stress fractures of the tibia and os calcis disappear slowly; the few cases the author has followed at a later date show that sometimes it takes over 24 to 30 weeks. Frequently, the metatarsal and fibular fracture lines are "V" shaped and displacement is seen. This should cause little concern. Bilateral fractures are common (90%) in the os calci and less so (15%) in the others. The periosteal elevation of the os calcis and tibial fractures is seen on the postero-superior and postero-medial aspect, respectively.

In order to diagnose and treat these cases effectively, the following recommendations are made:

1. Always look for point tenderness and edema. This will occur because of the fracture and will avoid the useless x-ray of many complaints for other purposes.
2. Clinical signs are infinitely more reliable than x-ray because of the delay in appearance of the fracture line. Bilateral signs are common.
3. Impress on the patient the lack of seriousness of the condition and that, if he desires to return to training, he may do so without harming himself.
4. Institution of a "hospital platoon"—not in the hospital—with special military and medical supervision to allow light duty and prevent "hospitalitis."

It is recommended that all medical officers in recruit depots become cognizant of the stress fracture situation and report their cases accurately. In order to do this, one of two diagnoses should be considered, either the Fracture, Incomplete (Stress) #8120, or an XY diagnosis. This makes statistical analysis much easier. Secondly, if possible, the heavy early training load in recruit depots should be cut to a minimum and a more gradual increase in calisthenics and repetitive exercises instituted. Thirdly, a study of other Armed Forces and branches of the U. S. Military Service should be made; stress fractures in their recruit depots should be analyzed as to time of occurrence and type of exercise and training being performed at the time of incidence of the fractures. Biopsies are not recommended, but if

performed, should be sent to the AFIP for study with other specimens already there. A series of control calcium phosphorus and phosphatase studies should be performed again, although in the past these have been negative.

Diagnosis of these fractures is not nearly as important from the standpoint of treatment as from the standpoint of avoiding more serious diagnoses (rheumatic fever, arthritis, neurosis) resulting in prolonged hospitalization and, sometimes, medical discharge. (LT J. W. Leabhart MC USNR, USNH, Beaufort, S. C., Stress Fractures)

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Murmurs in the Coarctation of the Aorta

At the present time, the murmurs of coarctation of the aorta are regarded as giving little information beyond a clue to the cause of one form of hypertension. They are usually described—according to Reifenstein, Levine, and Gross—simply as systolic murmurs heard over the precordial region, especially below the left clavicle and often at the back between the scapulae.

This article points out (1) two separate hemodynamic sources of systolic murmurs in uncomplicated coarctation, (2) identifies a diastolic, high-pitched, diminuendo murmur as actually a part of a continuous crescendo-decrescendo murmur arising from the aorta, (3) demonstrates a useful relationship between the severity of stenosis and clinically recognizable variations of the aortic murmur, (4) establishes a basis for differentiation of murmurs of aortic stenosis and aortic regurgitation from those of coarctation of the aorta, (5) presents an esophageal auscultatory technique from which may be predicted the position and severity of the stenosis, and (6) presents a method of study of murmurs which utilizes the measurement of the blood flow responsible for the murmur.

The diagnosis of coarctation rests largely on (1) a difference in blood pressure and pulse strength between the upper and lower aorta, (2) a systolic murmur, especially over the left upper chest, and (3) evidence of collaterals, such as visible pulsations on the posterior chest and notching of the ribs. The more subtle study of the murmurs as presented serves to predict the surgical anatomy and evaluate the success of operation.

With the development of newer surgical treatments for mechanical defects of the circulation, a need arises for a more exact interpretation of the auscultatory findings in the physical examination. No longer is it sufficient to make a simple categoric diagnosis because physicians need to know the exact pathologic anatomy and the functional severity of the lesion. The position and intensity of the associated murmur are insufficient. In this study, the authors have related the timing-duration and pitch-quality

as well as the position-intensity characteristics to the pathologic anatomy and the physiologic severity. In order to find the source of the murmurs and to define their characteristics, the vibrations were recorded directly from the artery wall at the time of surgical exposure, as well as the blood flow pattern through the distorted segment. Special nonsurgical techniques of nasal and esophageal auscultation were also employed to give pre- and postoperative data concerning the aorta.

From 20 consecutive patients treated surgically for coarctation of the aorta, an interpretation is presented for the variations in systolic, diastolic, and continuous murmurs. The murmurs were recorded directly from the surface of the arteries and from the esophagus by means of a catheter-tip microphone as well as from the chest wall and through the nasal airway with the Sanborn heart sound microphone. The abnormal blood flow pattern responsible for the aortic and collateral murmurs was recorded by means of the surgical probe of the square-wave magnetic flowmeter for unopened vessels. The aortic obstruction was measured as the internal diameter of the resected specimen and correlated with the aortic blood flow and murmurs. The basis for interpretation of the aortic murmur in stenosis correlations was established in 25 dogs by producing graded stenosis with a wire loop about the isthmal aorta and recording the aortic murmur, flow, and pressure.

The following conclusions were reached: (1) There are two separate sources of murmurs in uncomplicated coarctation of the aorta; these are (a) from the widely distributed collateral channels, and (b) from the aorta below the coarctation itself. (2) From the collateral channels, a systolic murmur only arises. This begins in early systole, is clearly separated from the first sound and builds up in loudness into, and ends in, the second sound. (3) The murmur in the post-stenotic aorta may be accurately recorded from the esophagus or directly from the aortic wall with a catheter-tip microphone; it may usually be heard on the posterior and anterior chest wall. The barium-titanate phonocatheter is extremely useful in evaluating murmurs directly from the heart and vessels during surgery. (4) The degree of aortic stenosis present in a given patient may be predicted from the duration, intensity, and general pitch of the murmur present in the aorta below the coarctation. (5) Coarctation with an internal diameter of 3 mm. or greater is accompanied by an aortic systolic murmur not extending beyond the second sound. This is coarse and of a blowing quality. (6) Complete obstruction of the aorta is attended by strong collateral systolic murmurs, but no significant aortic murmurs. (7) A continuous murmur heard from the aorta, esophagus, or over the spine between the scapulae means that the coarctation orifice is patent to no greater than 2.5 mm. in diameter. (8) The diastolic component of the continuous murmur transmitted to the precordium may lead to a mistaken diagnosis of aortic regurgitation. The diastolic decrescendo murmur of aortic regurgitation is commonly found in patients with coarctation (10% of the present series), but is not transmitted to the back. It further differs

from the continuous murmur of coarctation by its unique pitch and quality. (9) Aortic valvular stenosis is also commonly coexistent with coarctation (10% of the present series). Its murmur differs from the aortic systolic murmur and the collaterals' murmur of coarctation by beginning without separation from the first sound and ending before the second sound. (10) The mean aortic flow through the isthmus is not reduced unless the diameter of the lumen is compromised more than 8 mm. Little is to be gained hemodynamically by surgical provision of an internal diameter greater than 8 mm. One good indication for surgical intervention for orifices of 4 to 8 mm. is provided by the possibility of serious post-stenotic aneurysm. Because of poor collaterals in the group with orifices of 3 to 8 mm., the surgeon may anticipate the need for measures protective to the spinal cord and kidneys during the aortic clamping necessary to perform the repair. (11) Post-operative evaluation is improved by the interpretations of murmurs provided by this study. (Spencer, M. P., Johnston, F. R., Meredith, J. H., The Origin and Interpretation of Murmurs in Coarctation of the Aorta: *Am. Heart J.*, 56: 722-736, November 1958)

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Treatment of Leukemia

The treatment of leukemia remains dominated by the fact that resistance to all forms of therapy ultimately occurs.

The leukemias are a heterogeneous group of diseases. The major categories relate to chronicity (acute or chronic) and the morphologic type of disease (myelocytic, lymphocytic, or monocytic). Not only is the natural history different for these various categories, but response to therapy may differ greatly. Certain forms of therapy may favorably affect the course of chronic leukemia and adversely affect the course of acute leukemia.

More forms of therapy favorably affect the course of chronic myelogenous leukemia than any malignant disease process. Arsenic was introduced in 1865 and—as has been amply confirmed—is capable of producing an antileukemic effect. However, because of its toxicity, arsenic is no longer used. The same, in general, may be said for benzene and many subsequent compounds. Six of the nine compounds most frequently used were introduced after 1945, reflecting the accelerating pace of activity in this field. Also, it should be pointed out that, of these more recently introduced compounds, most are related to nitrogen mustard. These include myleran, chlorambucil, Thio-TEPA, and triethylene melamine.

In the early stages of chronic lymphocytic leukemia—particularly if there are no constitutional symptoms—treatment may be withheld. However, with the development of fever, night sweats, weight loss, anemia, or fatigue in either chronic lymphocytic or myelocytic, therapy should be instituted.

Irradiation therapy of leukemia was introduced by Senn in 1903. Clearly, this is the treatment of choice for localized symptomatic leukemic infiltrates. In terms of systemic antileukemic effect, there is no form of chemotherapy that is superior to x-irradiation.

The chemical compounds that are most promising in the treatment of chronic leukemia belong to the class known as alkylating agents. Investigators at the Chester Beatty Institute in Great Britain have done extensive work on these agents and have found evidence that the important biologic action—at least in terms of its antitumor effect—is dependent upon the fact that the alkyl radical combines with the phosphate moiety of desoxyribonucleic acid (DNA) and, thereby, interferes with cell division.

The more important alkylating agent from the practical point of view has been the demonstration that myleran is capable of selectively depressing granulocyte production in rats. Lymphocytes were irregularly depressed. In contrast to this, chlorambucil, another alkylating agent, has a selective effect on the lymphocytes. This immediately suggests that myleran might be a selectively potent agent in chronic myelogenous leukemia and chlorambucil in chronic lymphocytic leukemia. Indeed, myleran today is perhaps the chemotherapeutic agent of choice in chronic myelogenous leukemia. Although experience with chlorambucil is more limited, it may well become the agent of choice in chronic lymphocytic leukemia.

Therapy should be instituted in the early, fairly stable, or slightly progressive symptomatic stage of chronic myelogenous leukemia. There is no clear-cut difference between myleran and x-irradiation in terms of beneficial effect. Myleran is less expensive than total body or splenic irradiation and myleran only rarely causes toxic effects. Resistance ultimately occurs to all forms of therapy so that remissions become progressively shorter in duration. However, cross resistance does not occur and a patient no longer responding to radiation may have an adequate and long remission induced by myleran. The reverse is also true. As yet it is not known whether resistance to myleran means resistance to all alkylating agents. One of the other agents, such as colcimid or urethane, should be administered to a patient with active disease who is resistant to x-ray and myleran.

Finally, resistance to all agents occurs. This may take the form of an exhausted marrow or an accelerating rate of the leukemia process. This phase of chronic leukemia—the acute phase—is quite resistant to therapy, although, occasionally, transient improvement can be achieved with 6-mercaptopurine. There is no clear evidence that any available therapy prolongs survival of patients with chronic leukemia. However, it is clear that these agents do exert a beneficial effect in terms not only of lowering an elevated white count, but also of improving hemoglobin, decreasing size of organs, and alleviating constitutional symptoms, such as weight loss, fever, and fatigue.

The acute leukemias represent very different problems in therapy. There are three categories of chemical agents capable of inducing an

antileukemic effect in acute leukemia. These are illustrated in a Table. Two of these three categories belong to the general class of compounds known as antimetabolites.

Much experimental work with anticancer agents is based on the concept of metabolic interference. Response to therapy in patients with acute leukemia is markedly influenced by the age of the patient and the morphologic type of the disease. All three of the compounds are active in childhood acute lymphoblastic leukemia and remissions can be induced in the majority of such patients.

Acute leukemia is often a fulminating disease. Although the folic acid antagonists and 6-mercaptopurine produce longer remissions than do corticosteroids, there is delay of from 2 to 8 weeks before remission occurs. As many patients are acutely and critically ill when first seen, a more rapid effect is desirable. Here, corticosteroids have their primary advantage because their antileukemic effect is exerted immediately—often in a matter of hours and usually in a few days. Steroids have the disadvantage that remissions induced are relatively short.

The folic acid antagonists and 6-mercaptopurine depress marrow function. In leukemia, where marrow function is already compromised, patients must be under close observation during their use. These drugs also adversely affect the alimentary tract as manifested by oral ulcers, nausea, vomiting, and diarrhea.

In acute leukemia—unlike chronic leukemia—there is evidence that patients today live longer than they did 10 years ago. Then, the median survival for children was 4 months. At the present time, the median survival for children is 12 months. The author has considered "specific" therapy only. The management of complications, as well as supportive and symptomatic care, is of major importance and has contributed to improved survival. (E. Frei, III, The Treatment of Leukemia: GP, XVIII: 98-100, November 1958)

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Sarcoidosis

Sarcoidosis can no longer be regarded as a rare disease. A recent investigation disclosed 1194 cases of this disease in Veterans' Administration Hospitals in a 5-year interval; chest x-ray surveys of 1,000,000 inhabitants of Sweden between 1950 and 1954 detected almost half as many cases of sarcoidosis as tuberculosis. Whether these impressive numbers are merely the result of better recognition, or whether sarcoidosis is actually increasing in prevalence, remains to be determined. In either event, because of its growing importance, sarcoidosis is a disease with which all physicians should be familiar. Reported in this article are observations in 160 patients

who came under the authors' observation between 1938 and 1956, in clinic, hospital, and office practice. All cases included in this series had one or more biopsies demonstrating epithelioid tubercles.

A clear-cut distinction should be made between the sarcoid reaction which is a histologic diagnosis, and the disease sarcoidosis which is a clinical diagnosis, not to be made by the pathologist. The diagnosis of sarcoidosis requires, in addition to demonstration of consistent histologic changes, clinical laboratory, and radiologic evidence, as well as careful exclusion of the diseases which simulate sarcoidosis. Most patients with this disease exhibit a characteristic picture and, in these instances, the diagnosis can be made with a high degree of accuracy.

Sarcoidosis is a systemic disease and in order to establish its presence, systemic involvement must be demonstrated. This may be done by multiple biopsies, but ordinarily roentgenologic or clinical evidence of involvement in organs other than the site of biopsy suffices. Thus, an isolated skin lesion which on biopsy shows epithelioid tubercles may represent a foreign-body reaction; but if, in addition, there is pathologic evidence of similar lesions in a lymph node or the liver, or if there is roentgenologic evidence of mediastinal adenopathy or skeletal changes in hands and feet, or if characteristic ocular changes are observed, the diagnosis of sarcoidosis may be made with assurance.

When clinical manifestations are atypical, on the other hand, the diagnosis of sarcoidosis should not be made without exhaustive investigation to exclude tuberculosis and the numerous other causes of epithelioid granulomas. This will require such special studies as fungal skin tests, serologic tests for fungal infection and culture of biopsy specimens.

Histologic study is only a part of the evidence on which the diagnosis of sarcoidosis is based, but it is an important part. The difficulties and errors in diagnosis which may occur when pathologic studies have been carried out are multiplied when one attempts to make the diagnosis without such studies. Moreover, the excised tissue provides an opportunity for bacteriologic, mycologic, and chemical examinations.

The laboratory tests which are useful in supporting a diagnosis of sarcoidosis include a negative tuberculin test, increased γ -globulin, leukopenia, and hypercalcemia. These are characteristic features of sarcoidosis whose presence lends valuable support to the diagnosis of sarcoidosis; their absence does not contravene the diagnosis. Although many investigators have found the Kveim reaction useful in diagnosis, most observers consider the test unreliable because of the impossibility of maintaining adequate supplies of standardized test materials.

The differentiation of sarcoidosis, tuberculosis, and fungal infection is a constant concern. It is to be emphasized that sarcoidosis may be simulated by these other infections, or these diseases may develop in persons who have true sarcoidosis. Careful bacteriologic, mycologic, and serologic

study of atypical cases of sarcoidosis will minimize the likelihood of errors in diagnosis. The declining prevalence of tuberculous infection has, in recent years, reduced the hazard of tuberculosis as a sequel to sarcoidosis, but prolonged observation indicates that patients with sarcoidosis are at greater risk than the general population of contracting tuberculosis. This greater susceptibility is similar to that noted among patients with silicosis and is presumably due to the lowered resistance to infection of damaged lungs.

There have been remarkable variations in reported observations concerning the course of sarcoidosis. One of the earlier American studies by King of Boston indicated that the disease was almost invariably benign; of 37 patients, none died, only 3 worsened, and 26 improved. Reisner and Riley in New York had less favorable experiences; 7 of Reisner's 28 patients died, in 6 instances with tuberculosis. Tuberculosis developed in 13 of Riley's 52 patients and only 17 showed any improvement. Carr and Gage, on the other hand, observing 194 patients whose disease had been diagnosed at the Mayo Clinic, found only 3 deaths from sarcoidosis and 1 from tuberculosis. The survival rate of patients with sarcoidosis 10 years after diagnosis was 88% of the normal.

The authors' observations on 160 patients demonstrate a mortality rate of 8.1%. Two deaths were due to tuberculosis; the remaining eleven, to progressive sarcoidosis. Complete clearing of symptoms and radiologic changes were observed in 34.2% of the group and an additional 27.4% were classified as improved.

A variety of agents—including the commonly used antibiotics—mechlorethamine (nitrogen mustard), radiation, calciferol, and urethan, have been tried in sarcoidosis without consistent benefit. It is of special interest that isoniazid exerts no demonstrable influence on the course of sarcoidosis, a fact which argues strongly against a tuberculous etiology of this disease.

The only agents which have proved of value are the corticosteroids: cortisone and its derivatives and corticotropin. The effect on some manifestations of sarcoidosis is dramatic; patients acutely ill with uveoparotid fever may show disappearance of fever, parotid swelling, and ocular symptoms in 24 hours. The effect on mediastinal adenopathy, on the other hand, may be minimal.

Symptomatic improvement is obtained in most cases. Marked improvement was described by 61% of the authors' patients with symptoms of less than 6 months' duration, while a similar degree of improvement occurred in only 29% of patients with symptoms of longer duration. In a few patients whose diffuse pulmonary lesions showed no response to cortisone, marked clearing later occurred spontaneously. It should not be assumed that sarcoid lesions unaffected by cortisone are irreversible. (Israel, H. L., Sones, M., Sarcoidosis - Clinical Observation on One Hundred Sixty Cases: Arch. Int. Med., 102: 766-774, November 1958)

Coal Miners' Pneumoconiosis

That coal mining is a hazardous occupation as a result of accidents, explosions, and roof cave-ins, is well known. Less commonly known outside mining areas and compensation boards is an insidious, but frequently incapacitating pulmonary condition referred to in American literature as silicosis, anthracosilicosis, anthracosis, miners' asthma, and more recently, coal miners' pneumoconiosis.

The material for this study consists of chest films of 5651 patients primarily from the coal-mining areas of Southeastern Kentucky. Of this group, 2786, or approximately one-half, were male. A high proportion of this latter number were elderly men retired from the mining industry or referred from surrounding communities for Old Age Survivors Insurance examinations.

A mining history was obtained in about two-thirds of the men and 640 reported the length of employment. Roentgen changes of pneumoconiosis were found in 556. The average age in this series was 58.8 years.

Information was available as to the length of time spent in mining in 317 of the patients with pneumoconiosis. Of these, 263 had simple pneumoconiosis and 54 had complicated pneumoconiosis. The average length of employment in the mines for the group with simple pneumoconiosis was 34.2 years; for those with complicated pneumoconiosis, 36 years.

Of interest was the average age of these two groups—56.9 years for those with simple pneumoconiosis and 65.2 years for those with complicated pneumoconiosis. The duration of employment ranged from 10 to 59 years.

The chest roentgenogram is the only means by which coal miners' pneumoconiosis can be diagnosed in an asymptomatic person. The diagnosis is based on the nodular opacities in the lungs together with a history of prolonged exposure to coal dust. The characteristic pulmonary opacities of simple pneumoconiosis are minute (from 0.5 to 3.0 mm. in diameter), more or less circular, well defined nodules. They commonly appear in clumps. This produces a miliary appearance, but fine linear opacities often connect adjacent minute nodules into chains which enclose small translucent areas of emphysema, resulting in a lace-like appearance. Larger, more or less circular opacities up to 5 mm. in diameter also occur. In many cases, the findings are the same as those ascribed to silicosis and often in evaluating these cases, the authors believe that the two conditions cannot be differentiated. Short horizontal linear shadows are commonly seen in the basal portions of the lungs ("Kerley lines") probably due to dust deposition along the intercommunicating lymphatics or interlobular septa.

Accentuated pulmonary markings are frequently associated with the nodular opacities. The authors believe, however, that the diagnosis of pneumoconiosis can be made only in the presence of the characteristic nodular shadows. In cases with unequal involvement of the two lungs, the right lung practically

always showed the more marked changes unless these were masked by emphysema. In complicated pneumoconiosis, coalescent opacities more than a centimeter in diameter are superimposed on the characteristic nodular lesions of simple pneumoconiosis. In the early stages, these opacities may be indistinguishable from those of tuberculosis. The lesions have a tendency to progress, with the formation of massive fibrosis. Cavitation is not commonly seen except in the presence of an active complicating tuberculosis. Cavities are found, however, in the absence of tuberculosis, presumably as a result of ischemic necrosis.

The pathogenesis of the fibrosis in coal workers' pneumoconiosis has not been unequivocally determined. Some rock drilling and sanding of the tracks occurs in practically all mines and is a source of some silica dust. A very small concentration of silica is found in bituminous coal itself, but the concentration is below that usually considered to be dangerous in mine dust. However, the development of severe pneumoconiosis in coal trimmers—an occupation involving the loading of coal aboard ships—as reported by Gough, would indicate that coal dust is the primary etiologic factor. Frequently, the authors were unable to differentiate between "silicosis" and "coal miners' pneumoconiosis" and made no attempt to do so in reporting these cases.

In the early stages, coal miners' pneumoconiosis is asymptomatic. At this stage, it is revealed only by a survey chest film or roentgenogram of the chest incidental to examination for some other illness. In the more advanced states, the condition becomes symptomatic. Breathlessness on exertion in a patient with a history of having worked in coal mines for several years should suggest the possibility of pneumoconiosis. Severe breathlessness and distressing cough usually do not occur early in the course of the disease. The production of coal-stained sputum is common among miners and generally considered harmless, but copious production of inky-black sputum is suggestive of complicated pneumoconiosis with tissue necrosis. The clinical history and physical examination commonly contribute little to the diagnosis, especially in the early stages. They are important, however, in differentiating pulmonary and cardiac conditions complicating or simulating pneumoconiosis. Asthenia, loss of weight, tightness of the chest, and complaints referable to the upper gastrointestinal tract are common symptoms of a patient who is disabled by pneumoconiosis. Cor pulmonale is commonly present in advanced stages of the disease.

In view of the irreversible changes in this disease and the disability caused in its advanced stage, prevention becomes of great importance. It is preventable, but wearing of masks that are available is apparently not feasible. Suppression of dust is costly and primarily an engineering problem. Recent legislation making pneumoconiosis a compensable disease may stimulate use of preventive measures. (Reed, E. S., Wells, P. O., Wicker, E. H., Coal Miners' Pneumoconiosis: Radiology, 71: 661-672, November 1958)

Pectus Excavatum

That surgical correction of a funnel chest deformity is feasible and relatively safe is now well established. However, there is little agreement in the literature concerning age limitations, if any, for surgical correction, and even less unanimity of opinion about the actual surgical technique to be used. This article reviews the experiences of the authors in the correction of pectus excavatum deformities over the past 5 years.

The operation is best performed during childhood. Correction of these deformities is usually less formidable at this time than in later years. However, experiences have led to the belief that with present techniques, correction of a pectus may be carried out on teenagers and young adults with equally good results.

The prevention or correction of cardiorespiratory embarrassment is considered a prime indication for operative correction of a pectus excavatum. There can be little question that reduction in the anterior-posterior diameter of the mediastinum resulting from sternal depression can cause distortion or rotation of the heart and great vessels. The cough mechanism is often impaired as a result of this deformity. Although cardiorespiratory problems are relatively unusual during childhood, progression of the deformity may result in later difficulty. Another and equally valid indication for surgical correction is for cosmetic and psychologic reasons. A depression or deformity of the chest wall may be source of considerable embarrassment, especially during adolescence and young adulthood. Consequently, operative correction of such a deformity is well justified even in the absence of symptoms.

The authors' impression is that the symptoms associated with a pectus excavatum are probably more frequent than is generally appreciated. Although patients or the parents of the patients with a pectus excavatum frequently disclaim any limitation of activity, closer questioning often reveals that such patients have been slightly below normal in their activities when compared with their contemporaries. Many such patients have had rather frequent and prolonged respiratory infections. Six of the children seen had been treated by their pediatrician for varying periods of time for so-called "allergic bronchitis." The five adults in this series had some degree of disability associated with their deformity. In each instance, the disability consisted of moderate to severe exertional dyspnea and fatigability.

Thirty-nine patients with a pectus excavatum were seen at George Washington University Hospital in the 5-year period ending October 1957. Five patients were considered to have a minimal deformity with no associated symptoms and no operation was advised. Six small children were believed to be candidates for operation, but surgical intervention has been deferred until they are older. One adult patient with a rather marked deformity and associated symptoms refused operation. The remaining 27 patients were subjected to a total of 29 operations for the correction of a pectus excavatum deformity.

In the entire group of patients there were 24 males and 15 females. In patients who underwent operation, the age range was from 3 months to 34 years. Four of these patients were adults. Two of the adults showed associated manifestations of Marfan's syndrome.

There is little doubt that the simple operation described by Brown (excision of the xiphoid and division of the substernal ligament) can be carried out with a high degree of success if performed prior to the age of 1 year.

The authors' present policy is to defer operation if at all possible on patients between the ages of 1 and 3 years. During this period, the expected response to the simple operation of Brown is not satisfactory. Postponement of the operation is preferred until these children have reached a minimum age of 3 years, both mentally and physically.

In patients over the age of 3 years, some form of plastic reconstruction of the anterior chest wall has been employed. The principles of such an operation are:

1. Adequate exposure of the depressed portion of the sternum and adjacent deformed costal cartilages.
2. Freeing of the undersurface of the sternum from its ligamentous and fascial attachments to the mediastinum and diaphragm.
3. Resection of the involved costal cartilages, including division of the attachments of the rectus muscles to the costal margins when deemed advisable.
4. Osteotomy of the sternum. This may be either a transverse osteotomy or "T" fracture depending upon the severity of the deformity and the ease of adequate mobilization of the sternum.

Surgical correction of a pectus excavatum is feasible in teenagers and young adults as well as during childhood. Excision of the xiphoid and division of the substernal ligament give satisfactory results if the operation is performed prior to the age of 1 year.

The best cosmetic results in both children and adults have been achieved by the authors through the use of a strut passed beneath the sternum. The use of muscular exercises and postural training is an important adjunct to surgery in achieving a good over-all cosmetic result. (Adkins, P. C., Gwathmey, O., Pectus Excavatum - An Appraisal of Surgical Treatment: J. Thoracic Surg., 36: 714-723, November 1958)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

A Letter to the Surgeon General

"Medical Department,
Navy Office,
Melbourne. S. C. I

25th November, 1958

Dear Admiral Hogan,

I am writing in relation to the visit of Captain Thomas J. Canty U. S. N. (MC) to Australia during recent weeks.

It was my good fortune to see quite a lot of Captain Canty during his visit to Melbourne, and I have great pleasure in telling you that his visit has been a great success. Captain Canty created a profound impression with his obvious sincerity and love of his work. He inspired confidence in all whom he met, and especially the patients who badly needed his advice.

Apart from the professional aspects, Captain Canty proved himself an excellent ambassador for the United States, as he had a ready facility for getting on well with all types of people. In this he was well supported by Mrs. Canty. It gave me tremendous pleasure to see him in his naval uniform "showing the flag" so well.

We were fortunate that Captain Canty was able to visit Flinders Naval Depot and address the Medical Officers and staff at the Hospital. He showed the film concerning Gonzalo which you will probably know about. In addition, he spoke to Naval Medical Officers at Balmoral Naval Hospital, Sydney.

You will perhaps be pleased as Surgeon General to know that one of your officers has done so well here in Australia.

With all good wishes,

Very sincerely,

/s/
L. Lockwood

Surgeon Rear-Admiral
Medical Director-General, R. A. N. "

Advanced Course in Radiobiology
for Medical Officers

Convening in July 1959 - a nine month's course

Location: Reed College, Portland, Oregon

Student Clearance Required: TOP SECRET

Course Objective: Advanced training in Radiobiology in preparation for assignment to the Nuclear Propulsion Program of the Navy.

Deadline in submitting requests to Bureau of Medicine and Surgery -
30 January 1959

Itinerary

Phase I - Technical Refresher Training

Reed College, Portland, Ore.

6 July - 11 December 1959

Field Trip to Arco, Idaho Operations Office
Idaho Falls, Idaho

7 - 9 December 1959

Phase II - Industrial Health Physics

Hanford Works, Richland, Wash.

4 January - 11 February 1960

Phase III - Special Medical Orientation

a. Nevada Test Site, Mercury, Nev.

17 - 19 February 1960

b. Sandia Base, Albuquerque, N. M.

24 February - 11 March 1960

Phase IV - Mass Casualty Aspects

Walter Reed Army Institute of Research

Washington, D. C.

21 March - 22 April 1960

Quota: Army - 4, Navy - 2, Air Force - 12, and U. S. Public Health
Service - 1

Nominating Bureau: Bureau of Medicine and Surgery

Eligibility

1. Requests for attendance are invited from Medical Officers of the Regular Navy, and from active duty Reserve Medical officers who are eligible to apply for and be accepted for appointment in the Medical Corps of the Regular Navy.

2. Interested officers must submit a letter request via their Commanding Officers to reach BuMed (Attn: Code 316) prior to 30 January 1959.

(ProfDiv, BuMed)

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Full Approval for Surgical Program - USNH Great Lakes, Illinois

At its last meeting, the Conference Committee on Graduate Training in Surgery, representing the American Board of Surgery, the American College of Surgeons, and the Council on Medical Education and Hospitals, approved the residency program at the U.S. Naval Hospital, Great Lakes, Ill., for four years of training.

The program will be listed as approved on this basis in the next Directory of Approved Internships and Residencies of The Journal and the Approval Number of The Bulletin (A. C. S.). (ProfDiv, BuMed)

* * * * *

Subspecialty Training in Internal Medicine

Certain criteria have been established for any candidate for subspecialty training in Gastroenterology, Hematology, Allergy, Cardiology, and Chest Diseases, for Medical officers on active duty in the Navy. Such training is necessary for the best staffing of our larger naval hospitals and it is anticipated that a small number of doctors will be so trained.

Preferably, a candidate should be in the rank of Lieutenant, Lieutenant Commander or Commander of the Regular Navy; should have completed three full years of residency training in Internal Medicine, and have passed Part I of his American Boards.

Applications from Naval Medical officers who meet these criteria should reach the Bureau of Medicine and Surgery by 15 January 1959. (ProfDiv, BuMed)

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Applications for Instruction in Pharmacy Technic

A large training requirement for Pharmacy Technicians continues to exist as a result of expanding operational requirements and other factors. Therefore, it is requested that each command accord wide publicity to the continuing need for qualified applicants for training in this specialty.

Information

| | |
|---------------------------|--|
| Course Title: | <u>Pharmacy Technic</u> |
| Length of Course: | 38 weeks |
| Convening Date: | 29 April 1959 |
| Location: | USNH, Portsmouth, Va., USN Hospital Corps School, San Diego, Calif. |
| Subjects: | Principles of Pharmacy Operative and Dispensing Pharmacy Pharmaceutical Mathematics Materia Medica and Toxicology Inorganic and Organic Pharmaceutical Chemistry |
| Obligated Time: | 24 months upon entry into course |
| Eligibility Requirements: | All HM1, HM2, and HM3 |

Command Responsibility

1. Solicit and encourage applications for subject course utilizing all available publicity media.
2. Evaluate each prospective candidate relative to educational background, practical experience in the technical specialty requested, positive motivation, career motivation, physical and mental fitness, and in accordance with instructions contained in the Catalog of Hospital Corps Schools and Courses.
3. Endorse all applications so that the results of paragraph (2) above are reflected.

Action by Applicants

1. Prepare application in accordance with the sample contained in BuMedInst 1510.4C and comply with instructions contained in the Catalog of Hospital Corps Schools and Courses, BuMedInst 1510.9.
2. Applications should be forwarded in time to reach the Bureau of Medicine and Surgery no later than 20 January 1959. (PersDiv, BuMed)

Second Class in Nuclear Nursing Offered
to Regular and Reserve NC Officers

Course Title: Nuclear Nursing
Duration: Four (4) months
Convening Date: 16 March 1959, concludes 1 July 1959
Place: Department of Nuclear Medicine
U. S. Naval Medical School
National Naval Medical Center
Bethesda, Md.

Submission Date: Applications with enclosures to be submitted
no later than 10 January 1959 to Chief, Bureau
of Medicine and Surgery, Code 32. Detailed
information of qualifications and required
enclosures have been forwarded to field
activities. (Nursing Div, BuMed)

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New Films Concerning Medical Defense
Against Chemical Warfare

Two BuMed films in a new series bearing the general title Medical
Defense Against Chemical Warfare have just been released.

The first film, MN-8266-a, subtitled "Basic Plan for Handling Casualties," is for Medical officers and other members of the medical team who will be required to process and treat chemical warfare casualties. The basic plan demonstrated is for the deployment and use of first-echelon medical forces. The film shows a method of establishing and equipping a decontamination area, and shows the processing of casualties by means devised to assure that contamination will not be spread beyond the first medical facility behind the forward area. The main action by which the picture explains the plan is an assumed attack in land warfare on a body of Marines; however, the film also depicts modifications of the plan for use aboard ship and at fixed medical facilities. The picture is 18 minutes long and is supplied in 16-mm. black and white. It is intended for screening before Medical Department personnel only.

The second new release under the main title Medical Defense Against Chemical Warfare is subtitled "Gas-Attack Self Aid" and is intended for

all hands in the Navy and Marine Corps. It is 20 minutes long and is also in 16 mm. black and white. The film shows what each individual is to do to protect himself against contamination by a chemical-warfare agent, and to prevent serious consequences in case of such contamination. It shows a method of decontaminating the eye if it is splashed with liquid mustard or nerve gases or an arsenical; it shows what to do when clothing or skin is contaminated by any liquid agent; and it tells how to recognize the signs of nerve-gas poisoning in time to protect one's self. The film demonstrates clearly the technique of self-injection with atropine.

Officers responsible for planning programs of passive-defense instruction will find this second film useful, not only for their military audiences, but also for mixed groups at large stations where there are many civilian employees.

Additional pictures in this series will be announced in the News Letter on their completion. Those in the current group were photographed at Camp Lejeune with the support of the Second Marines, Second Marine Division; the Second Marine Aircraft Wing; the Second Engineer Battalion, and the Second Amphibious Tractor Battalion, Force Troops, Camp Lejeune; and the Second Medical Battalion, Second Marine Division.

Prints of the current releases are being distributed to Naval Hospitals, Hospital Corps Schools, District Training Aids Sections and Libraries and Marine Corps training film libraries. If prints are not available through your usual source, address inquiry to the Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C. (AudioVis Training, BuMed)

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From the Note Book

1. Rear Admiral B. E. Bradley MC USN, the Deputy Surgeon General, and Rear Admiral E. C. Kenney MC USN, Assistant Chief of Bureau, participated in the Mid-Year Clinical Session of the American Medical Association held in Minneapolis, Minn., 2 - 5 December 1958. (TIO, BuMed)
2. Rear Admiral J. W. Kimbrough MC USN (Ret) has fulfilled the conditions for membership and has been admitted a Member of the Royal Society of Health. (Editor)
3. A Registry of Forensic Pathology, the 24th component of the American Registry, has recently been established at the Armed Forces Institute of Pathology under the sponsorship of the College of American Pathologists. The basic objective of the new registry is the collection of well worked-up

and well documented medicolegal cases to be used as a reservoir for teaching and research. Cases are now being accepted for registration from pathologists. A six-month fellowship in forensic pathology at the Armed Forces Institute of Pathology has been provided by the College as a part of its sponsoring support. (AFIP)

4. The Public Health Service has reported that radioactivity levels in milk collected during August from 10 sampling stations across the country continued to be below the current permissible levels recommended by the National Committee on Radiation Protection and Measurements. Radiation levels from 6 stations showed a decline in strontium-90 compared with July data. These were the stations in the milksheds serving Austin, Tex.; Cincinnati, Ohio; Fargo, N.D.; New York, N.Y.; Salt Lake City, Utah; and St. Louis, Mo. Three stations in the milksheds serving Atlanta, Ga.; Chicago, Ill.; and Sacramento, Calif. reported slight increases over July. (PHS, HEW)

5. An 8% stannous fluoride solution, applied once to erupted permanent teeth, was tested in students aged 12 and 13 years, to determine the solution's ability to inhibit caries for 1 year. Five hundred and ten students were divided into control and experimental groups. At the end of 1 year, 472 students returned for examination. Compared with the control group, the experimental group had 20% fewer carious new teeth and 14.5% fewer new carious surfaces. (Public Health Reports, November 1958; W.A. Jordan, D.D.S., J.R. Snyder, D.D.S., V. Wilson, M.D.)

6. Sympathectomy for occlusive peripheral vascular disease is neither the panacea which will relieve all claudication, heal all ulcers, eliminate gangrene, and prevent amputation, nor an obsolete procedure. (Arch. Surg., November 1958; G. de Takats, M.D.)

7. A new syndrome is described which constitutes a well-defined clinical entity, characterized by dyscephalia with dyscrania, mandibular aplasia and bird face, dental anomalies, nanism, hypertrichosis, atrophy of the skin, microphthalmia and congenital cataract. (Arch. Ophth., November 1958; J. Francois, Ghent, Belgium.)

8. Acute nonsuppurative thyroiditis is a self-limiting disease of unknown etiology, possibly viral, lasting usually for 1 or 2 months. Occasionally, a case may progress to a form of chronic thyroiditis, but the complication of permanent hypothyroiditis is extremely rare. (Arch. Int. Med., November 1958; S. S. Bergen, Jr.)

9. Patients with pernicious anemia in relapse have been studied as examples of vitamin B₁₂ depleted subjects. A critical study of parenterally administered vitamin B₁₂ required for initial response and the long-term maintenance of these patients has been made. (Am. J. Med., November 1958; W.J. Darby, M.D., et al.)
10. The treatment of Laennec's or portal cirrhosis is primarily nonspecific and supportive. Patients are seen in all stages of the disease, but those who have severe symptoms and signs invariably will require long-term treatment. (Postgrad. Med., November 1958; F.J. Owens, E.N. Collins)
11. Blood volumes were determined for 52 men and 45 women over the age of 60. All subjects were healthy and normal. Radiochromate-tagged red cells were used to determine the blood volume. Findings indicate that blood volume relation to body weight or surface area does not change with age. (Anesthesiology, November-December 1958; R.H. Smith, M.D.)
12. A method for contrast visualization of lymph nodes is described. Injections were carried out in 35 instances in 20 patients without any untoward effects. (Radiology, November 1958; N. Zheutlin, M.D., E. Shanbrom, M.D.)

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BUMED INSTRUCTION 7330.2

24 November 1958

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: Checkage of Hospital Rations, active duty Navy and Marine
Corps Officers

Ref: (a) NavCompt Manual par. 044025-2b(1)(c)
(b) BuMedInst 7330.1A (Notal)
(c) BuMedInst 6320.26

This instruction provides procedures for the disbursing officer's endorsement on copies of Hospital Ration Notice (S&A-534) and obtains additional information concerning days applicable to Navy and Marine Corps officer patients on active duty subsisted from a hospital mess.

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DENTAL**SECTION****Aspirating Syringe Being Adopted**

Extensive service tests have been completed on commercial cartridge type dental syringes to determine their suitability for aspiration during use.

The syringes which were found satisfactory will become available throughout the Navy sometime during 1959. Requisitions for this item should not be submitted until announced as available in the Medical and Dental Materiel Bulletin published by the Field Branch, Bureau of Medicine and Surgery.

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Sterilization and Disinfection
of Dental Handpieces

A program for the sterilization or disinfection of dental handpieces is a precaution which must be taken to prevent transfer of infection from one patient to another. The associated problems have been complicated within the past few years by the development of high speed handpieces with finely machined or delicate parts which may be susceptible to damage by debris, moisture, or heat.

Research studies which were conducted independently by Captain G. L. Parke DC USN and Captain M. G. Wheatcroft DC USN evaluated various means for the cleaning, sterilization or disinfection, (Sterilization - destruction of microorganisms and their spores. Disinfection - destruction of infectious microorganisms, but not necessarily their spores) and lubrication of dental handpieces. Highlights from their reports follow:

Summary of Parke's Studies

1. Common pathogenic non-sporulating mouth organisms were destroyed when the handpieces were properly cleaned and then immersed in liquid petrolatum for two minutes at a temperature of 250° F. This level of disinfection was classed as "relative sterility"—comparable to results commonly produced by the boiling of dental instruments in water.

2. No damage resulted to either the metal parts or plastic spacers of the handpieces when the above practice was followed.

3. Recommended procedures:

a. Operate the handpiece in a cleaning solution (1 part carbon tetrachloride, 1 part xylol, and 2 parts Liquid Petrolatum) USP, (Heavy) for one minute to remove grit, mucous, and other contaminants.

b. Immerse the handpiece in Liquid Petrolatum, USP, (Heavy) at 250° F. for two minutes. If sufficient handpieces are placed in the sterilizer at one time to cause an appreciable drop in temperature, the two-minute period must be allowed after the temperature of the oil again reaches 250° F. (A sterilizer which is thermostatically controlled to maintain temperatures between 250 and 260° F. is required.

c. Place the handpiece in a suitable container to drain.

d. Wipe the handpiece, when cool, with a piece of gauze dampened in alcohol if necessary.

Summary of Wheatcroft's Studies

1. Three methods for handpiece care were reported. Two of the methods were capable of attaining actual sterility of the handpieces, while disinfection was accomplished by the third method.

2. Autoclave Sterilization

a. This was considered the method of choice for the sterilization of handpieces that could be subjected to the necessary heat and moisture without damage.

b. Slightly greater, although not excessive, wear resulted with the handpieces that were operated under laboratory conditions and autoclaved 115 times as compared to the controls that were not autoclaved.

c. Recommended procedures:

(1) Run the handpiece in a cleaner and a lubricant recommended by the manufacturer to remove debris and to coat the bearings lightly with oil. This prevents caking of debris and protects metal parts against corrosion during sterilization.

(2) Autoclave the handpiece at 120° C. for twenty minutes.

(3) Run the handpiece in a cleaner and an oil that have been sterilized by autoclaving. This removes moisture and provides the necessary lubrication.

(4) Place the handpiece in a sterile envelope for storage until required.

3. Ethylene Oxide Sterilization

a. Ethylene oxide gas was found effective for the sterilization of handpieces that are subject to damage by autoclaving. Four hours of exposure to the gas was found sufficient to disinfect, but sixteen hours exposure was required for complete sterilization.

b. Because ethylene oxide is a toxic, flammable, and explosive gas, it is mixed with inert gases to eliminate the danger of explosion.

A mixture such as Carboxide, which contains 10% ethylene oxide and 90% carbon dioxide is suitable. The mixtures are available in small cylinders about the size used for inflatable life belts.

c. A small gas sterilizer, manufactured by Ben Venue Laboratories, Bedford, Ohio, was used in the study.

d. Recommended procedures:

(1) Clean and lubricate the handpiece in accordance with the manufacturer's directions.

(2) Insert the handpiece in an envelope which may be sealed if desired.

(3) Place the handpiece in the sterilizer and introduce the gas from the cylinder.

(4) Allow the handpiece to remain for either four hours for a disinfectant effect or for sixteen hours to obtain sterility.

(5) After step 4 next above, pump the cover of the sterilizer several times to dissipate the gas.

(6) Remove the envelope and the handpiece for storage until required.

4. Disinfection by Liquid Cleaner

a. The study revealed that it is possible to destroy vegetative organisms, but not spores, through a modified procedure for the cleaning and lubrication of handpieces.

b. The germicidal effect was found to be a function of the handpiece cleaner. Of three commercial cleaners tested (Midwest, Chayes, and Otis), Midwest was the only one possessing the required germicidal properties.

c. Viable organisms were found immediately upon completion of the cleaning and lubricating procedures, but all vegetative forms were destroyed after the handpieces were allowed to stand for thirty minutes.

d. Recommended procedures:

(1) Run the handpiece in fresh Midwest Handpiece Cleaner for thirty seconds.

(2) Drain and run the handpiece in fresh lubricating oil for thirty seconds.

(3) Set the handpiece aside for at least thirty minutes to obtain the disinfecting effect.

Summary. When complete sterilization of dental handpieces is required, autoclaving appears to be the method of choice. This method is applicable if metal and plastic parts are not subject to damage by moisture and heat. Procedures involved are not expensive or too time consuming. For handpieces that cannot be autoclaved, sterility may be obtained through use of ethylene oxide gas, the major disadvantage of which is the long time required for exposure of the handpiece to the gas. Disinfection of handpieces is possible through the use of hot oil, ethylene gas, or a selected handpiece cleaner.



RESERVE SECTION

Correspondence Course Training

Aviation Medicine Practice - NavPers 10912-A. 1957 Edition, recommended for all Medical Department personnel.

Technological development during the 20th century in the field of aviation has been so extensive that Navy aviation cannot further advance with safety unless the effect of aeronautical technology upon human physiology is adequately understood. Flight at speeds and heights now possible hinges upon the feelings, the thinking, and the physiological reactions of the aviator. Navy aviation medicine seeks to understand the problem, and offers assistance to the aviator in meeting it.

The course material is designed to aid officers of the Medical Department in their understanding of the problem. Approximately the first half of the course concentrates on matters related to the physiology of flight and the selection of men who are equipped physically to withstand the severe demands of flight training. The second half of the course deals primarily with the complex field of aviation psychology, and emphasis is placed upon methods of adequately selecting well-adjusted flight personnel. As nearly as possible, the items in the course are clinical and practical. Every effort has been made to cover problems most likely to confront the practicing flight surgeon.

The course consists of six (6) objective type assignments and is evaluated at eighteen (18) Naval Reserve promotion and/or nondisability retirement points. Naval Reserve personnel who previously completed the course, "Aviation Medicine Practice," NavPers 10912, will receive additional credit for the completion of course NavPers 10912-A.

Submarine Medicine Practice - NavPers 10707-A. 1958 Edition.

The recent unprecedented venture of the Nautilus has given true significance to submarine capability. The nuclear powered fleet envisaged for the future, pioneered by dedicated personnel in the Service, is well under way. It is a magnificent tribute to technological achievement.

This correspondence course should be of special interest to all Medical Department personnel. It is based upon "Submarine Medicine Practice,"

NavPers 10838-A, the highlights of the latest developments and accumulated experience resulting from years of research and investigations. Designed as a comprehensive guide, it can be utilized for training Medical Department personnel in the many intricate problems associated with submarine medicine practice.

The course includes discussions pertaining to personnel selection and assessment procedures, improvement of submarine habitability factors, solution of human engineering problems aboard submarines, submarine escape and rescue operations, and the medical aspects of all other undersea operational problems directed toward the improvement of the military effectiveness of the Submarine and Amphibious Forces.

Because nuclear submariners are at present drawn from conventional submariners, this course provides valuable background information not only in the principles of submarine service, but also in the basic screening of nuclear submariners. It will open the door to new and unlimited opportunities for increased knowledge and greater contributions to research in the medical problems associated with nuclear mobility.

"Radiation Exposure Patterns Aboard the USS Nautilus," a timely authoritative reprint, is furnished as supplementary reading material.

The course consists of six (6) objective type assignments and is evaluated at eighteen (18) Naval Reserve promotion and/or nondisability retirement points. Naval Reserve personnel who previously completed course NavPers 10707 will receive additional credit for the completing of course NavPers 10707-A.

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AVIATION MEDICINE DIVISION



Flight Surgeon Activities

Several flight surgeons distribute informative "blurb" sheets to their personnel at intervals. These sheets are highly regarded for they contribute to the practice of good aviation medicine. Examples of two such sheets are reprinted below:

Inside the Red Star Brain Laundry

During the fracas in the land of the almond-eyes beauties, a trick of warfare became publicized which was immediately condemned as the most

inhuman, unfair, and generally scurvy trick that was ever perpetrated. The newspaper boys got busy on it and even coined a brand new word for it. They called it "brain-washing." And they got everybody thoroughly terrified of it. The word was that it was an irresistible force, that there was no defense against it. Visions of scientists in laboratories with vast machines arcing sparks into peoples' head-bones came to the mind's eye. These same people who claim they only wanted to warn against it did us a disservice.

The plain, unvarnished truth is that brainwashing represents a special technique of prisoner of war control and interrogation which has been common medical knowledge for some hundred years. A modification of a technique of psychoanalysis (also a dark and misty word), it is anything but irresistible, and in fact depends upon a certain relationship built on a type of cooperation which the psychiatrists refer to as "transference." Having ingested that little nugget, you're just about as smart about it as you were last week, so we'll elaborate.

Psychoanalysis is a means of disassembly, inspection, and reassembly of a personality, the supposition being that reassembly will be accomplished according to a more acceptable pattern than the old one. It is implied, then, that there is a certain amount of control exercised over the new pattern by the mechanic in charge—and that's exactly true. In the course of this procedure, a relationship (transference) must be built up between the assembler and the heap of spare mental parts which is rather complex, but which is essentially the looking on the manipulator as an authority figure of some sort, and also comprising at least a passive cooperation. In other words, as long as the man who is being analyzed (or brainwashed) is apathetic toward his analyst, the analyst (or brain launderer) can make pretty fair headway.

So the great problem in brain laundries is getting people to this state of apathy. It can easily be seen that if you're convinced that this is a supernatural tool and that these captors are in league with the evil spirits, and that there's nothing you can do about it, the captors have their battle about 75% won. All that remains is for them to put the finishing touches on you. This is why the beliefs which were mentioned at the beginning are so dangerous and should be avoided like the plague. Because, like all other tricks of the interrogator, all you have to do is resist, and you've clothed yourself in a suit of armor they can't penetrate.

Let's look at a typical situation. H. Stanley Sludge, our intrepid helicopter driver, has an engine failure behind enemy lines. He's captured. And the first thing that comes to his mind is: "I'm cooked. Sure as Sikorsky makes an NACA 0012 airfoil my brain will be laundered. And it said in Time Magazine that I'll be helpless."

So the Snuffies that capture Stan take him to the head man who sits him down and has a little chat with him. Stan forgets all about Name-Rank-Serial Number-Date of birth and begins to chat a bit with this fellow. Doesn't tell him anything important, understand. Just that he was born in New Jersey,

voted Democratic in the last election, thinks something ought to be done about the labor unions, wants to get out of this mickeymouse outfit, thinks service life is for the birds, thinks the Declaration of Independence has something to do with prohibition or free love of something—nothing important. No, not much.

But it earmarks Stan for the treatment. They try talking to him, but eventually Stan begins to get the message. They've got him figured for a Patsy. No soap. But his resistance now is less than it might have been at first. So they switch tactics. Let's leave our hero and catalogue the possible courses they might take.

The important thing is that none of them are irresistible. What about "truth serum"? Well, what about it? The varieties in use are nothing but sleeping medicine and work on the same theory the high school boys used to use in keeping their dates out real, real late. As the subject gets sleepy, the resistance to suggestion goes to hell. But you can still resist if you make a conscious effort. They can only give you so much of this stuff and then you go to sleep. And asleep you're not in much shape for personality rebuilding. Hypnosis is the same deal. They can't do it if you resist. Physical and mental tortures are designed for the same thing—to reduce your resistance. If it's strong enough, they simply won't work.

Another encouraging point to remember. These people are in the volume business. They're on a piecework basis. If they see they're going to have to waste too much time and manpower on you, they'll abandon the project. They probably have a few dozen more prospectives they're waiting to try. They'll give you up as too tough.

Once your resistance is cracked, and this transference—this almost father-son relation of dependency—has been built up between you and one of the laundrymen you are indeed cooked. But it takes a long time and a lot of passivity bordering on cooperation to get you to that point. Once there, it's a fantastic teaching process and here's where the father-son simile is apt. You may remember how, as a child, you took everything your father said as approximately gospel. This is the state they've got you to now. Your counselor can tell you black is white and have you believing it.

But again, there's a lot of groundwork necessary between that point and your capture. And here's a relieving thought. An Army psychiatrist named Mayer who was a POW himself and who has interviewed some 30,000 POW's has assured us that no one can be brainwashed involuntarily. In other words, you have to give up first. Because they can pump you full of sleeping medicine (or truth serum, if you prefer) until they run out of it, or even lock you up in a room and play rock and roll records 24 hours a day, but there's still no way, repeat, no way that they can assume control of your own precious little brain unless YOU hand them the keys. You do this initially mainly by running off at the mouth about seemingly unimportant things. Later, you do it by abandoning hope.

That's the low down on the old psychiatric trick called by the Madison Avenue set "brainwashing." Please don't let it shake you. It's neither new nor irresistible. If you believe that, your brain is already in the laundry. All they'd have to do is add soap and agitate.
(MEDImouse and His Hirsute Histories, MAG-26 Flight Surgeon, 28 August '58)

All Officers, Second Marine Air Wing

In view of the increasing number of corpulent (excessively fat) individuals in this area, we have been requested to give you a few "gems of wisdom" in re avoidupois.

Obesity, if present for many months or years, always causes complications, statistically increases the mortality rate, and lowers life expectancy. At age 45-50, the elevation above the average death rate is as follows:

| | |
|------------------------|-----|
| 10 lbs. overweight.... | 8% |
| 20 " " | 18% |
| 30 " " | 28% |
| 50 " " | 56% |

Obese persons succumb to cardiovascular-renal (heart, blood vessel, and kidney) disease about 60% more frequently than those of normal weight. Being overweight will also result in higher death rates from diabetes, nephritis, pneumonia, and post-surgical complications. Even death from accidents or suicide is considerably more common in the obese due to psychologic factors. Other complications include high blood pressure, arthritis of the back and knees, foot troubles, and varicose veins.

It should be needless to remind you aviators of the additional difficulties presented in escape from your aircraft, discomfort due to a tight fit in your cockpit, and the increased chance of aeroembolism (decompression sickness, bends, etc.). This latter condition is related to age and body build. In general, the occurrence of symptoms increases with age or with the ratio of weight to height.

If the cause can be discovered, proper treatment instituted, and the cooperation of the patient secured, the results are excellent in early obesity but, in cases of long standing, complications may continue despite weight loss.

Although heredity and "glandular malfunction" may play a contributory role, there is only one immediate cause of obesity: A CALORIC INTAKE PERSISTENTLY EXCEEDING THE CALORIC OUTPUT. (in other words, you are eating or drinking too much!) Since the capacity of the body to store

protein and carbohydrates is strictly limited, excess food in any form, be it peanuts or a whisky sandwich, is converted into and stored as fat.

Inasmuch as the great majority of military personnel are in relatively good physical condition, factors, such as heredity, glandular disease, and other causes of obesity present a minimal problem.

Whenever a tendency to obesity becomes evident, proper eating habits should be established and moderate regular exercise encouraged. The value of exercise in weight reduction is limited. Activity stimulates the appetite and it takes a walk of 2-1/2 miles to consume the energy (120 calories) represented by one slice of bread. Diet restriction is always necessary no matter what the cause of obesity.

Usually the first signs—other than obvious appearance—are those of fatigue, shortness of breath, leg or backache, or painful feet. There are diet sheets available in our office designed for either a rapid or slow weight loss, guaranteed to give results provided you have the intestinal fortitude to comply with them.

Just to confuse you a little—don't go overboard on reducing—it does require medical supervision. Furthermore, in view of two recent aircraft accident reports which stated that "causative factors were probably due to faulty eating habits," we feel the following statements to be apropos (especially to "coffee only for breakfast" aviators).

It has been proved conclusively that "non-feeding" or irregular eating practices over an extended period contribute to fatigue, human error, and possible aircraft accidents. The human body should be "refueled" just as regularly as the aircraft you are flying.

Visual and psychomotor tests in humans suggest that the ingestion of glucose (sugar) improves performance at altitude. On the other hand, there is evidence that a low blood sugar interferes with oxygenation of the central nervous system so that a mild lack of oxygen may produce symptoms which would not occur with a normal blood sugar.

Any blood sugar determination below 80 mgm/100 cc is considered to be lower than normal. (We saw one 53.3 mgm/100 cc following an accident last month.) Symptoms may range from sweating, flushing, pallor, hunger, trembling, headache, dizziness, weakness, apprehension, or fainting—depending upon how low a level is reached.

Wise up—the fact remains that an empty stomach is not conducive to good flying!

We have been reading some very interesting dope on G's during the past month, mostly from the Journal of Aviation Medicine. Here are a couple of excerpts which may provoke some thought.

It has been demonstrated that the chimpanzee can survive exposure to 40 G positive, negative, or transverse, applied for a period of 15 seconds. Current studies at the USN Air Development Center and the AF Missile Center conclude that: (a) by positioning the subject fully supine, blood is prevented from pooling in any localized region before the start of the exposure, and (b) by ensuring that G is applied transversely throughout the run, the G force is distributed evenly through all tissues. Thus, throughout the exposure, no one vital organ is overtaxed by an initial engorgement with blood and a subsequent further distention through an even momentary alignment with "positive G" vectors of appreciable magnitude.

The immediate effect of the present study is to extend the experimentally observed survival time limit for the chimpanzee to at least 40 G for 60 seconds at maximum G with relatively little damage resulting when the animal sustains the G force in the fully supine position. Undoubtedly, from the evidence obtained, it may be inferred that a shorter exposure at this G level could be endured without loss of consciousness or occurrence of an incapacitating injury.

From the Wright Air Development Center on "human tolerance to some accelerations anticipated in space flight." Acceleration of the anticipated magnitude and duration is best tolerated with the body positioned (human now, not chimpanzee) so that the forces can act transversely in a chest-to-back or back-to-chest direction. The optimal body position for exit (from space) appears to be a seated position with a 20° inclination of the trunk in the direction of acceleration, with the legs fully flexed (seated, forward-facing). Three stage accelerations sufficient to reach orbital velocity with peaks of either 8, 10, or 12 G are tolerable in this position.

Some of the patterns of the deceleration of re-entry can be tolerated, in the seated, forward-facing positions with the aid of an effective restraint system. Tolerance would be only slightly improved by rotating the subject to face aft during re-entry. Accelerations of less than 4 G are tolerable in either chest-to-back, or foot-to-head direction for long enough to exceed escape velocity. Prolonged low G acceleration patterns, while not feasible with current propulsion systems, have the high potential advantage of enabling man to reach a very high velocity (200,000 mph) and to retain a degree of mobility sufficient to perform limited control functions during the boost phase. Immersion of the entire subject in water enables the attainment of tolerance TIMES greater than twice those reached in any other way. The full possibilities of this method of protection have not been explored. These articles in their entirety are available in our office for those who might be interested.

Results of vision tested in several regions from 0 to 60 degrees revealed no apparent decrement as a result of breathing 100% oxygen at atmospheric pressure for a period of over four hours. (USN School of Aviation Medicine)

When did you have your flight suit cleaned last? We don't object too much to the odor or worry about your personal appearance, but—dirty clothing can play havoc with a laceration or burn where infections and resulting healing of tissues are concerned.

Now, for some advice to you Marines with Cub Scouts running around the house. Too frequently, children have easy access to medicine cabinets and other sources of poison. Here are a few words regarding emergency treatment prior to obtaining medical help. (Suggested by The American Public Health Association)

1. If the poison is a drug or non-corrosive substance, except kerosene and other fuel oils, induce the child to vomit immediately. First give him water—preferably tepid—or milk or the white of an egg. These will have a neutralizing effect or diluting action on the poison and will make vomiting easier. Then lay him across your lap, face down, head lower than the hips, and place your fingers at the back of his throat.

2. If the poison is corrosive, DO NOT INDUCE VOMITING, because burns could close the esophagus. Corrosives are the strong acids found in many disinfectants and cleaners; and the powerful alkalies like lye, washing soda, some cleaning agents, and most drain cleaners. If the child is able to swallow, neutralizing substances should be given. Milk or milk of magnesia diluted with water for acids; diluted vinegar or any kind of fruit juices for alkalies. They may be followed with a tablespoon of salad oil to soothe the membranes.

3. In all cases, after treating the child, rush him to the hospital. Take the suspected poison along with you in its original container to facilitate identification and institution of further medical treatment. Naturally, these suggestions are also applicable to adults.

(Staff Medical Officer, Second Marine Aircraft Wing, October 1958)

* * * * *

Windchill Charts

A variety of windchill charts are available for Fleet Commanders' use. Everyone knows that it feels colder when the wind blows, but most people don't realize how much colder it is. The wind table shows, for example, that if the temperature is expected to be 35 degrees and the expected wind velocity is about 20 miles per hour, the effect on exposed flesh is the same as 38 degrees below zero with no wind.

Dr. Paul A. Siple on an expedition to the Antarctic performed the early work on windchill phenomena. He observed that the time required to freeze

cans of water exposed to the cold was influenced by both temperatures and wind speed. This work was reported in "Measurements of Dry Atmospheric Cooling in Sub-Freezing Temperatures," Siple, P. A. and Passel, C. F.; Proceedings of the American Philosophical Society, Vol. 89 (1945), page 177, which gives the formula:

$$(\sqrt{v} / 100 / 10.45 - v) (33 - T_a) = K_o$$

K_o = Cooling power of the atmosphere in kilogram calories per hour per sq. meter (windchill value).

v = Wind velocity in meters per second.

T_a = Temperature of air in degrees Centigrade.

A windchill monogram based on temperatures in Fahrenheit and Centigrade and windspeeds in miles per hour and meters per second is contained in "General Principles Governing Selection of Clothing for Cold Climates" Siple, P. A.; Proceeding of the American Philosophical Society, Vol. 89 (1945), page 209. A like monogram and information on windchill for Navy use is also contained in Naval Warfare Publication NWP-35 Cold Weather Operating Procedures. Windchill values do not account for the influence of solar radiation and humidity or heat loss by exhalation and radiation, but the greatest deterrent to more widespread use of these values is the need to learn a new set of numerical expressions. The following adjective ratings are taken from "The Arctic Circular," Ottawa, Ontario, Vol. V., No. 3, March 1952:

| <u>Windchill Value</u> | <u>Sensation</u> |
|------------------------|--------------------------------|
| 50 | Hot |
| 100 | Warm |
| 200 | Pleasant |
| 400 | Cool |
| 600 | Very Cool |
| 800 | Cold |
| 1000 | Very Cold |
| 1200 | Bitterly Cold |
| 1400 | Exposed flesh liable to freeze |

Dr. A. C. Burton, Biophysicist, University of Western Ontario, proposed a unitary system for expressing windchill in degrees Fahrenheit by taking into account equivalent temperature decrements due to wind and temperature increments due to solar radiation, or still-air-shade temperature minus windspeed plus solar radiation. This work is reported in "Assessment of the Thermal Demand of the Environment," Burton, A. C. (Canada); Fourth

Commonwealth Defence Conference on Clothing and General Stores, London, 1953. Burton omits relative humidity on the ground that it is too complex to work into the unitary system. Nevertheless, this work does include solar radiation which is omitted from other charts to date.

Recently, the U. S. Army published a windchill chart which Field Commanders could use for the adequate protection of troops. The table of equivalent temperatures on exposed flesh with varying wind velocities up to 45 miles per hour is being published in an Army Circular (40-33, dated 3 November 1958).

The table and instructions for its use follow:

WIND CHILL CHART

Wind Velocity*

| 45 | 35 | 25 | 20 | 15 | 10 | 5 | 3 | 2 | 1 | 0 |
|---------------|-------|------|-------|-------|--------|-------|-------|-------|-------|-------|
| Temperature** | | | | | | | | | | |
| 90° | 89.5° | 89° | 88.5° | 88° | 88.75° | 87.5° | 87° | 86° | 84.5° | 83° |
| 82 | 81 | 80.5 | 80 | 79.5 | 78 | 76 | 74 | 72.5 | 70 | 60 |
| 72 | 71 | 69.5 | 68 | 67 | 65 | 60 | 57 | 53.5 | 47.5 | 23 |
| 63 | 61 | 59 | 57 | 55 | 52 | 44.5 | 39 | 34.5 | 20 | -11 |
| 51 | 49 | 47 | 45 | 42.5 | 38 | 28 | 18.5 | 11 | 0 | -27 |
| 41 | 39 | 36 | 34 | 30.5 | 25 | 11 | 0 | -9 | 23.5 | -38 |
| | | | | | | | | | Below | Below |
| 30 | 28 | 25 | 23 | 18 | 11 | -5 | -16.5 | -40 | -40 | -40 |
| | | | | | | | | Below | | |
| 20 | 18 | 14 | 11 | 6 | -2 | -19 | -40 | -40 | " | " |
| | | | | | | | Below | Below | Below | Below |
| 10 | 7.5 | 3 | 0 | -6 | -15 | -35 | -40 | -40 | -40 | -40 |
| | | | | | | Below | | | | |
| 0 | -2.5 | -8 | -12 | -18 | -29 | -40 | " | " | " | " |
| | | | | | Below | | | | | |
| -11 | -14 | -18 | -23 | -30 | -40 | " | " | " | " | " |
| | | | | Below | | | | | | |
| -21 | -24 | -30 | -35 | -40 | " | " | " | " | " | " |
| -32 | -35 | -40 | -40 | -- | -- | -- | " | " | " | -- |

*Miles per hour

**Degrees Fahrenheit

Instructions for use of the table:

1. First obtain the temperature and wind velocity forecast data.
2. Locate the number at the top corresponding to the expected wind speed (or the number closest to this).

3. Read down this column until the number corresponding to the expected temperature (or the number closest to this) is reached.

4. From this point, follow across to the right on the same line until the last number is reached under the column marked zero (0) wind speed.

5. This is the equivalent temperature reading. Example: Weather information gives the expected temperature (at a given time, such as midnight) to be 35° F. and the expected wind speed (at the same time, midnight) to be 20 miles per hour (mph). Locate the 20 mph column at the top, follow down this column to the number nearest 35° F. The nearest number is 34° F. From this point, move all the way to the right on the same line and find the last number which is -38° F. This means that with a temperature of 35° F. and a wind of 20 miles per hour, the effect on all exposed flesh is the same as -38° F. with no wind (the same as being in a deep freeze!).

Medical officers are encouraged to disseminate this information with lectures so that naval personnel can be protected adequately this winter. Flight crews particularly will be affected.

* * * * *

Prescription Sunglasses for Naval Aviators

Congress has recently approved funds for the provision of prescription sunglasses to qualified naval aviators. BuMedInst 6810.4 of 18 June 1958 refers.

"6. Aviation Prescription Sunglasses. Pilots of naval aircraft on active duty whose vision is less than 20/30 in either eye correctable to 20/20 in each eye and who are required to wear a correction while flying may be furnished with specially designed aviation prescription sunglasses. Pilots of naval aircraft on active duty requiring reading glasses of one or more diopters of power may be furnished bifocal aviation sunglasses even though the distant vision is 20/20 without glasses.

a. Spectacle orders for aviation prescription sunglasses must be approved by the senior flight surgeon or the head of the medical department of a command or other activity. Written justification to the effect 'Prescription glasses must be worn while flying in accordance with ManMed 15-63 or 15-64' (whichever is appropriate) must accompany all aviation prescription sunglass requests. Aviation prescription sunglasses for bifocals requiring plano (no power) in the distance portion of the lens should be justified in a manner similar to the following: 'This pilot has 20/20 vision in each eye for distance and requires assistance for reading instrument panel, maps, etc.'

b. Facial and frame measurements for prescription sunglasses should be identical to those forwarded for standard plastic spectacles. These will be transposed to the required sunglass measurements by the personnel of the laboratory. The type of glass currently authorized is 'Neutral 15 or equivalent.'

c. Until further notice, all spectacle order requests for aviation prescription glasses accompanied by written justification of need and approval as noted above should be forwarded to the Ophthalmic Lens Laboratory, U. S. Naval Supply Center (Norfolk), Cheatham Annex, Williamsburg, Va., for fabrication. "

The "neutral 15" glass referred to in the instruction is identical to the standard plano Navy aviation sunglass. This glass has a transmission of visible radiation of approximately 15%. No other tint is authorized. It is not necessary to specify the type frame required since there is only one type, a sturdy gold filled frame, authorized. Flat-top bifocal segments are available in "neutral 15" if required and requested.

Due to the limited funds available, top priority will be given to requests for prescription sunglasses for naval aviators on active duty. Dependent upon the availability of funds, aircrewmembers having a requirement for prescription sunglasses may be accommodated. However, the latter requests must be forwarded to the Chief, Bureau of Medicine and Surgery for approval and must contain a complete statement in justification of need. Each request will be judged on its individual merits.

Flight surgeons should determine their requirements for aviation prescription sunglasses to be furnished naval aviators and forward the spectacle orders promptly. This will assist in determining whether sufficient funds remain to provide aircrewmembers with prescription sunglasses.

* * * * *

Color Vision Testing

Have you seen the training film MN 8246 - Color Vision Deficiency - Definition and Evaluation? Flight surgeons and enlisted personnel conducting flight physical examinations should see this film. Particular attention is invited to the importance of the proper administration of the tests, the use of the equipment involved and the environment in which the tests should be conducted. In the past, through improper administration of the tests, we have not always succeeded in eliminating color defective personnel from the aviation program. Discovery of this defect at a later date leads to possible disenrollment with the attendant loss of the training investment not to mention the career of the individuals concerned.

* * * * *

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget 19 June 1958.

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The Noisy Night Before Christmas

Screech! Boom! Bang! The streets of the nation rang out on Christmas Eve 1957. Motorists died at twice the rate they died on Christmas Day. The first holiday hour was the worst; more fatal auto accidents than in any succeeding hour; more pedestrian deaths too.

Why did the holiday dance of death kick up a clatter so soon? Partly because half-tipsy thousands streamed home from office parties haphazardly and hazardously. Partly because sober workers heavy-footed the gas pedal in the dash home.

What was the result? An average of 12 deaths an hour from 6 p. m. to midnight on Christmas Eve compared with fewer than 5 deaths an hour during the next 24 hours. Twenty-five fatal auto accidents, including 9 pedestrian deaths, during the first noisy hour. (Traffic Safety, September 1958)

Well, anyhow -

MERRY CHRISTMAS!

Color Vision Testing

Have you seen the training film MM 8546 - Color Vision Defectancy - Definition and Evaluation? Flight surgeons and enlisted personnel conducting flight physical examinations should see this film. Particular attention is directed to the importance of the proper administration of the tests, the use of the equipment involved and the environment in which the tests should be conducted. In the past, through improper administration of the tests, we have not always succeeded in eliminating color defective personnel from the aviation program. Discovery of this defect at a later date leads to possible disqualification with the consequent loss of the training investment not to mention the career of the individual concerned.

Permit No. 1048

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